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EXAMINER	
AHN, SANGWOO	

ART UNIT	PAPER NUMBER
2166	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	**Application No.** 10/677,736	**Applicant(s)** SAUERMANN ET AL.	
	Examiner Sangwoo Ahn	**Art Unit** 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05142004, 01312005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 8, 10 – 11, 17 – 19, 24 – 30, 33 – 35, 37 – 40, 43 – 45 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Number 6,829,695 issued to Jay Bruce Ross (hereinafter "Ross").

With respect to claim 1, Ross discloses,

A method comprising:

building a first result set (Figure 1 element 106, Figure 2 element 200, et seq.); and

performing a logical operation based on the first result set (Figure 1 element 112, Figure 2 element 204, et seq.),

wherein building the first result set includes:

identifying a first data record, the first data record including a first attribute from among a first attribute set, the first attribute set stored in a first tree structure (column 5 lines 50 – 53, et seq.); and assigning a first marker to the first data record, wherein the first marker is included in the first result set (Figures 25C – D: TAG ID, column 41 lines 18 – 20, et seq.).

With respect to claim 2, Reiner discloses,

building a second result set, wherein building the second result set includes identifying a second data record, the second data record including a second attribute from among the first attribute set (Figure 1 element 108, Figure 2 element 202, column 5 lines 50 – 53, et seq.).

With respect to claim 3, Ross discloses,

the first data record and the second data record are stored in a second tree structure (Figure 1 element 108, Figure 2 element 202, column 5 lines 50 – 53, column 6 lines 59 – 62, et seq.).

With respect to claim 4, Ross discloses,

performing a logical AND combination between the first result set, based on the first marker, and the second result set, based on the second attribute (column 6 lines 29 – 30, column 5 lines 49 – 51, column 41 lines 18 – 20, et seq.).

With respect to claim 5, Ross discloses,

assigning a second marker to the second attribute (Figure 25D, Figure 32, column 41 lines 18 – 20, et seq.).

With respect to claim 6, Ross discloses,

performing a logical AND combination between the first result set, based on the first marker, and the second result set, based on the second marker (column 6 lines 29 – 32, column 41 lines 48 – 50, et seq.).

With respect to claim 7, Ross discloses,

performing a logical OR combination between the first result set, based on the first marker, and the second result set, based on the second marker (column 8 lines 42 – 43, et seq.)

With respect to claim 8, Ross discloses,

performing a logical NOT combination on the first result set, based on the first marker, by de-selecting data records associated with the first result set and selecting remaining data records that include attributes from the first attribute set other than the first attribute (column 6 lines 29 – 32, column 8 lines 42 – 43, column 17 lines 36 – 38, et seq.).

With respect to claim 10, Ross discloses,

identifying the first data record is in response to a first query (column 5 line 23, et seq.).

With respect to claim 11, Ross discloses,

associating a second marker with a second data record including the first attribute, in response to the first query (Figure 25D, Figure 32, column 41 lines 18 – 20, et seq.); and

grouping the first maker and the second marker in the first result set (column 41 lines 48 – 50, et seq.).

With respect to claim 17, Ross discloses,

changing a value of a first bit within a first bitmap (column 40 lines 12 – 15, column 41 lines 9 – 18, et seq.).

With respect to claim 18, Ross discloses,

bits within the bitmap correspond in number to a total amount of data records available for searching (column 5 lines 19 – 21, column 41 lines 44 – 51, et seq.).

With respect to claim 19, Ross discloses,

building a second result set, wherein building the second result set includes selecting a second data record, the second data record including a second attribute from among a second attribute set (Figure 1 element 108, Figure 2 element 202, column 5 lines 50 – 53, et seq.).

With respect to claim 24, Ross discloses,

performing a bitwise operation using the first bitmap (column 6 lines 30 – 32, et seq.).

With respect to claim 25, Ross discloses,

associating the first bit with the first data record by calculating a bitmap memory address of the first bit relative to a data record memory address of the first data record (column 12 lines 30 – 36, et seq.).

With respect to claim 26, Ross discloses,

A system for searching data, the system comprising:

an interface operable to input data records, attributes associated with the data records, and queries, and further operable to output the data records, the attributes, and query responses (column 5 lines 50 – 53, et seq.);

a data storage device operable to store the attributes in a first tree structure, and further operable to store the data records in a second structure, the second structure relating a first data record to a first attribute (column 5 lines 50 – 53, et seq.); and

a search subsystem operable to build a first result set in response to a first query, the first result set including a first marker associated with the first data records, and further operable to perform a logical operation based on the first result set (Figures 25C – D: TAG ID, column 6 lines 29 – 31, column 41 lines 18 – 20, et seq.).

With respect to claim 27, Ross discloses,

the second structure is a second tree structure (column 6 lines 59 – 62, et seq.).

With respect to claim 28, Ross discloses,

the search subsystem operable to build a second result set in response to a second query, the second result set including a second marker associated with a second data record (column 5 line 65 – column 6 line 1, Figure 25D, Figure 32, column 41 lines 18 – 20, et seq.).

With respect to claim 29, Ross discloses,

the search subsystem operable to perform the logical operation based on the first marker and the second marker, to thereby build a third result set which includes at least one of the first marker and the second marker (column 6 lines 29 – 32, column 41 lines 48 – 50, et seq.).

With respect to claim 30, Ross discloses,

a counter associated with the third result set and operable to count a total number of markers within the third result set (column 12 lines34 – 36, et seq.).

With respect to claim 33, Ross discloses,

the first marker and the second marker are changed-value bits within a first bitmap and a second bitmap, respectively (column 40 lines 12 – 15, column 41 lines 9 – 18, et seq.).

With respect to claim 34, Ross discloses,

the search subsystem performs the logical operation by performing a bitwise combination of the first bitmap and the second bitmap, to thereby obtain a third bitmap as the third result set (Figure 2 et seq.).

With respect to claim 35, Ross discloses,

the search subsystem associates the first bit within the first bitmap with the first data record by calculating a bitmap memory address of the first bit relative to a data record memory address of the first data record (column 12 lines 30 – 36, et seq.).

With respect to claim 37, Ross discloses,

An apparatus comprising a storage medium having instructions stored thereon, the instructions including:

a first code segment for selecting a first marker within a first result set, the first marker associated with a first data record including a first attribute that is stored in an attribute tree structure (Figures 25C – D: TAG ID, column 5 lines 50 – 53, column 41 lines 18 – 20, et seq.);

a second code segment for performing a logical operation based on the first marker (Figure 1 element 112, Figure 2 element 204, column 41 lines 48 – 50, et seq.);

a third code segment for individually selecting remaining markers within the first result set, where the second code segment iteratively performs further logical operations based on the remaining markers (column 41 lines 48 – 50, column 45 lines 14 – 17; 31 – 36, et seq.); and

a fourth code segment for building a final result set based on the logical operations (column 7 lines 35 – 37, et seq.).

With respect to claim 38, Ross discloses,

a fifth code segment for deleting marker which are not included in the final result set; and

a sixth code segment for decreasing a counter associated with the first result set accordingly (column 12 lines 34 – 36, et seq.).

With respect to claim 39, Ross discloses,

the first code segment includes a fifth code segment for selecting a second marker within a second result set, the second marker associated with a second data record including a second attribute that is stored in the attribute tree structure (Figure 25D, Figure 32, column 41 lines 18 – 20, et seq.).

With respect to claim 40, Ross discloses,

the second code segment includes a sixth code segment for performing the logical operations based on the first marker and the second marker, so that the final result set includes at least one of the first marker and the second marker (column 6 lines 29 – 32, column 41 lines 48 – 50, et seq.).

With respect to claim 43, Ross discloses,

the first marker and the second marker are changed-value bits within a first bitmap and a second bitmap, respectively (column 40 lines 12 – 15, column 41 lines 9 – 18, et seq.).

With respect to claim 44, Ross discloses,

The second code segment is for performing the logical operation by performing a bitwise combination for the first bitmap and the second bitmap, to thereby obtain a third bitmap as the third result set (Figure 2 et seq.).

With respect to claim 45, Ross discloses,

associating the firs bit within the first bitmap with the first data record by calculating a bitmap memory address of the first bit relative to a data record memory address of the first data record (column 12 lines 30 – 36, et seq.).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9, 31, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross in view of U.S. Patent Number 5,715,413 issued to Yuval Ishai et al (hereinafter "Ishai").

With respect to claim 9, Ross discloses the first marker and that it is linked to the first data record via a pointer.

Ross does not explicitly disclose the instantiation of an object class in an object-oriented programming language.

However, Ishai discloses the instantiation of an object class in an object-oriented programming language (abstract, column 2 lines 25 – 32, et seq.). At the time of the present invention, it would have been obvious to a person of ordinary skill in the data processing art to combine the above two references because Ishai's instantiation of an object class in an object-oriented programming language would have enabled Ross's system to provide convenient means of controlling the operation of a computer system application programs.

Claims 31 and 41 are rejected based on the same rationale discussed above.

Claims 12 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross in view of U.S. Patent Number 5,471,611 issued to Douglas R. McGregor (hereinafter "McGregor").

With respect to claim 12, Ross discloses grouping the first marker and the second marker.

Ross does not explicitly disclose a pointer between the first marker and the second marker.

However, McGregor discloses a pointer between the first marker and the second marker (column 2 lines 7 – 23, et seq.). At the time of the present invention, it would have been obvious to a person of ordinary skill in the data processing art to combine the two references because McGregor's pointer method would have enabled Ross's system to reduce great computational complexity and processing time, and to resolve query inference problems.

With respect to claim 13, Ross discloses,

selecting a third data record, the third data record including a third attribute from among a second attribute set; and associating a third marker with the third attribute (Figures 25C – D, et seq.).

With respect to claim 14, Ross discloses,

performing the logical operation between the first result set and the second result set to obtain a final result set; determining that the first and third marker are included in the final result set; determining that the second marker is not included in the final result set; deleting the second marker from the final result set; and re-directing the first pointer from the first marker to the third marker (column 6 lines 29 – 32, column 41 lines 48 – 50, et seq.).

With respect to claim 15, Ross discloses,

associating a counter with the third result set, the counter operable to indicate a number of markers within the third result set (column 12 lines34 – 36, et seq.).

With respect to claim 16, Ross discloses,

the first result set and the second result set are linked to one another using pointers (Figure 2, Figure 25D, et seq.).

Claims 20 – 23, 36, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross in view of "DatenbankSysteme" issued to Rahm et al (hereinafter "Rahm").

With respect to claim 20, Ross discloses the result sets and bitmaps.

Ross does not explicitly disclose linking a set identifier via a pointer, and identifier linked together in a tree structure.

However, Rahm discloses linking a set identifier via a pointer, and identifier linked together in a tree structure in section 8.1.2. At the time of the present invention, it would have been obvious to a person of ordinary skill in the data processing art to combine the two references because Rahm's method would have enabled Ross's system to efficiently and more quickly access data, therefore, reduce processing time and computation complexity.

Claims 36 and 46 are rejected based on the same rationale.

With respect to claim 21, Ross discloses,

assigning a second marker to the second attribute by changing a value of a second bit within a second bitmap (column 40 lines 12 – 15, column 41 lines 9 – 18, et seq.).

With respect to claim 22, Ross discloses,

performing a bitwise combination between the first bitmap and the second bitmap, to thereby obtain a third bitmap (Figure 2 et seq.).

With respect to claim 23, Ross discloses,

associating a counter with the third bitmap, the counter being operable to count a number of changed-value bits within the third bitmap (Figure 33B, column 12 lines34 – 36, et seq.).

Claims 32 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross and Ishai, further in view of Rahm.

With respect to claim 32, Ross and Ishai disclose the system of claim 31.

Ross and Ishai do not explicitly disclose result sets linked together using pointers.

However, Rahm discloses result sets linked together using pointers in section 8.1.2. At the time of the present invention, it would have been obvious to a person of ordinary skill in the data processing art to combine the two references because Rahm's method would have enabled Ross's system to efficiently and more quickly access data, therefore, reduce processing time and computation complexity.

Claim 42 is rejected based on the same rationale.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sangwoo Ahn whose telephone number is (571) 272-5626. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sangwoo Ahn
Patent Examiner
AU 2166

5/12/2006 SW

MOHAMMAD ALI
PRIMARY EXAMINER